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# ARM Facilities Newsletter

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## Intensive Observation Period Projects Scheduled

Several IOP projects have been scheduled for the SGP CART site this spring. These projects either have already begun or will begin shortly.

### *Radiosondes*

The RS-90 Transition IOP is currently under way. The RS-90 model radiosonde is gradually replacing the older RS-80 model. Radiosondes are instrument packages attached to and launched by weather balloons. The instruments measure atmospheric pressure, temperature, and relative humidity as the balloon rises through the air. The new RS-90 model is a high-performance radiosonde with fast-response sensors capable of providing data for each variable every second. The relatively environmentally friendly package is constructed of

cardboard and steel rather than Styrofoam, and it has a water-activated battery that contains no toxic substances.

The RS-90 Transition IOP is taking place during April. Operators will launch both the old RS-80 and the new RS-90 radiosondes simultaneously once each day to obtain duplicate vertical profiles of the atmosphere for comparison. This procedure will also allow data users to test the output from the old and new radiosondes in models.



Figure 1. The RS-80 radiosonde (on left) is being replaced by the new RS-90 model radiosonde (on right).

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### *Narrow Field of View (NFOV) Solar Spectrometer Cloud Optical Depth Retrieval Campaign*

The NFOV IOP is scheduled to take place on May 7-August 31, 2001. A researcher from Pennsylvania State University will be deploying a dual-spectrometer instrument that measures the hemispheric flux and zenith NFOV radiance over a wavelength range of 300-1000 nanometers. (One nanometer equals 1 billionth of a meter or 0.000000039 inches.) This wavelength range includes the ultraviolet, visible, and near-infrared spectra. These measurements are used to estimate cloud optical depth — a quantity related to the amount of solar radiation intercepted by a cloud — for broken cloud fields over vegetated surfaces. The IOP measurements will be compared with optical depth measurements made by SGP instruments.

### *Precision Gas Sampling (PGS) Validation Campaign*

Researchers from Lawrence Berkeley National Laboratory in California will be deploying instruments at the CART site in May. Portable micrometeorology towers will be used to measure fluxes of carbon dioxide, water, and heat between the surface and the atmosphere. The exchange of these constituents varies with regional climate, soil type, and surface vegetation. Greater knowledge will improve the accuracy of computer models (and hence predictions) of the exchanges. Measurements made with the portable instruments will be compared with measurements being collected by instruments at the central facility.

### *AWS Campaign*

The State University of New York at Albany will deploy an oxygen A-band and water vapor band spectrometer (AWS) at the CART site on May 20-June 30, 2001. Measurements made by the AWS will be used to determine absorption of radiation by water vapor within clouds, a quantity important to understanding the behavior of solar radiation as it passes through clouds.



Figure 2. The Precision Gas Sampling (PGS) instrumentation is attached to the 60-meter meteorological tower located at the SGP CART site central facility.